ENMOS
SIMPLICITY SMART

Felis T / T+

USER'S MANUAL

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FRONT PANEL APPEARANCE

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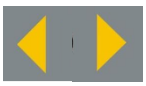
KEYPAD USAGE

Manual Buttons	
	Manual cold water alarm button. Use this button to apply cold water operations in manual working mode and button's LED helps you to see the situation of operation at that moment. Also it is used to fill water while writing a program.
	Manual hot water alarm button. Use this button to apply hot water operations in manual working mode and button's LED helps you to see the situation of operation at that moment. Also it is used to fill water while writing a program.
	Manual soft water alarm button. Use this button to apply soft water operations in manual working mode and button's LED helps you to see the situation of operation at that moment. Also it is used to fill water while writing a program.
	Manual heating button. Use this button to apply direct heating operation in manual working mode and it indicates heating operation to be made directly while writing a program.
	Manual wash button. Use this button to apply wash operation in manual working mode. While the program is in editor mode, the turning of tambour can be activated or deactivated by the related operation.
	Manual extraction button. Use this button to apply extraction operation in manual working mode.
	While the program is in manual working mode, tilt of machine can be activated. You may move the machine up and down by usingthe ↑↓ buttons
	Door opening button. Use this button only to open the door. Closing door is applied automatically
	Manual indirect heating button. Use this button to apply indirect heating in manual working mode. It indicates that in program editor heating operation of automatic program to apply indirectly.
	Alarm menu enter button. Use this button to enter alarm watching screen. If there is an alarm in the system, LED of alarm button flashes.
	Manual direct drain button. Use this button to apply direct drain operation in manual working mode. It indicates in program editor draining operation of automatic program to apply directly.
	Manual indirect drain button. Use this button to apply indirect drain operation in manual working mode. It indicates that draining operation of automatic program will be done indirectly in program editor.
A B C D E F	***Automatic detergent unit buttons***. Use these buttons to indicate automatic program to take detergent from defined unit. It is used in program editor.

KEYPAD	
	Use these buttons to enter alpha numeric values.
	This key changes running mode (Auto/Manual)
	You may use this button, to activate the main menu in any screen except automatic program watching screen.
	Use this button to delete and undo entries of alpha numeric values.
	Use this button to exit the editor or to cancel operation.
	Use this button to start the automatic program.
	Use this button to stop or to cancel the automatic program
	Use these buttons to skip page in menus and to navigate through fields.
	You may use this button to move through lines and to move the machine up and down while TILT button is activated.
	Confirmation button. Use this button to confirm entries and information windows.

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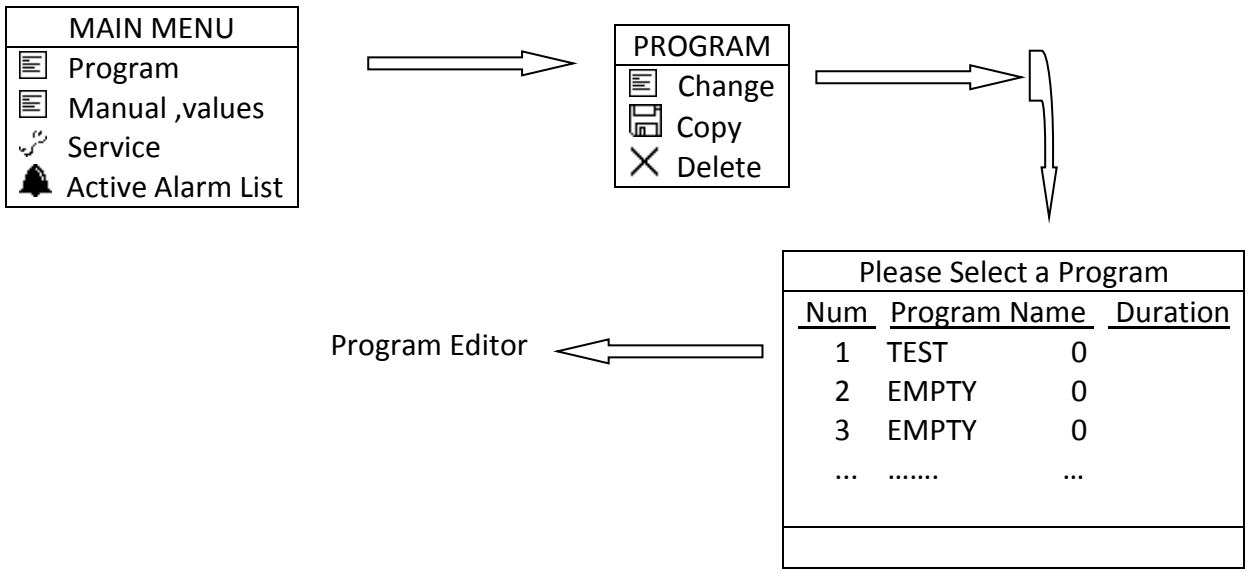
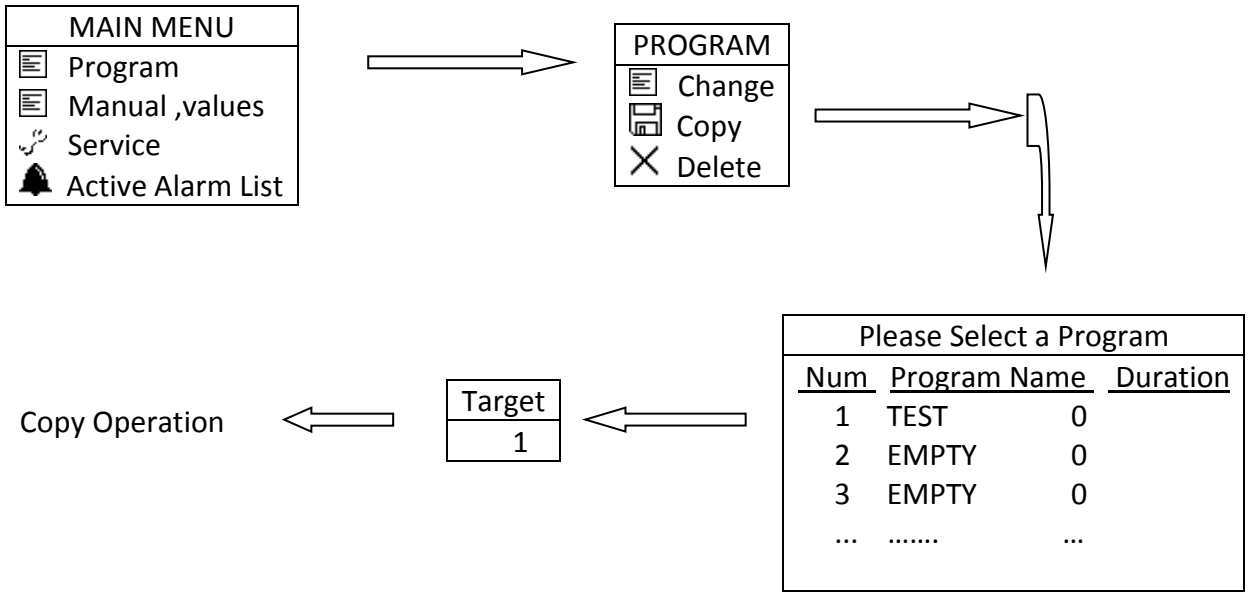
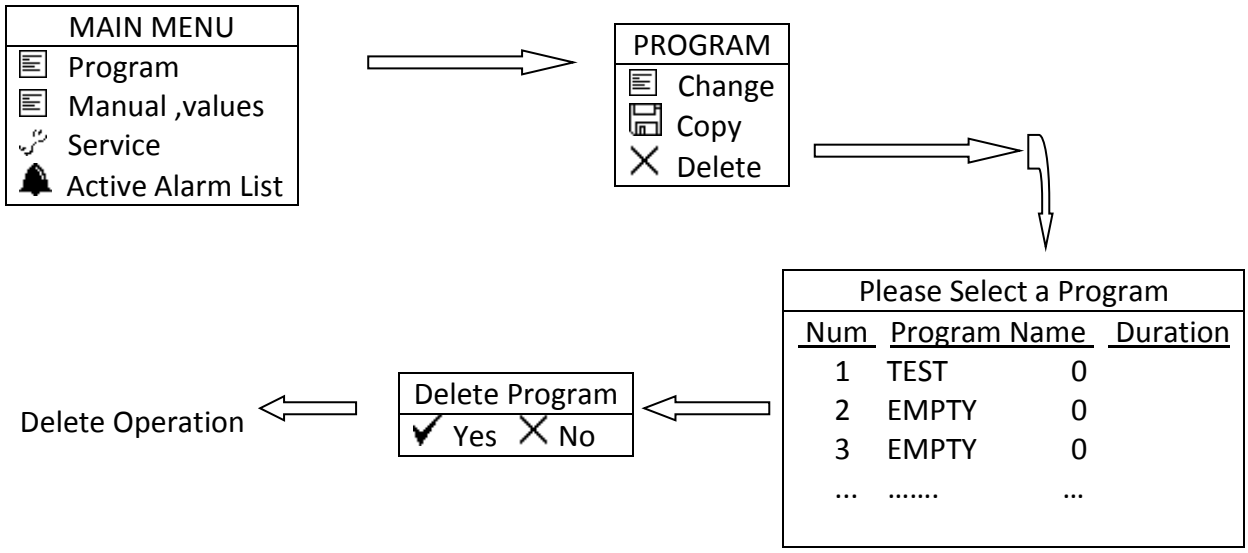
MENUS

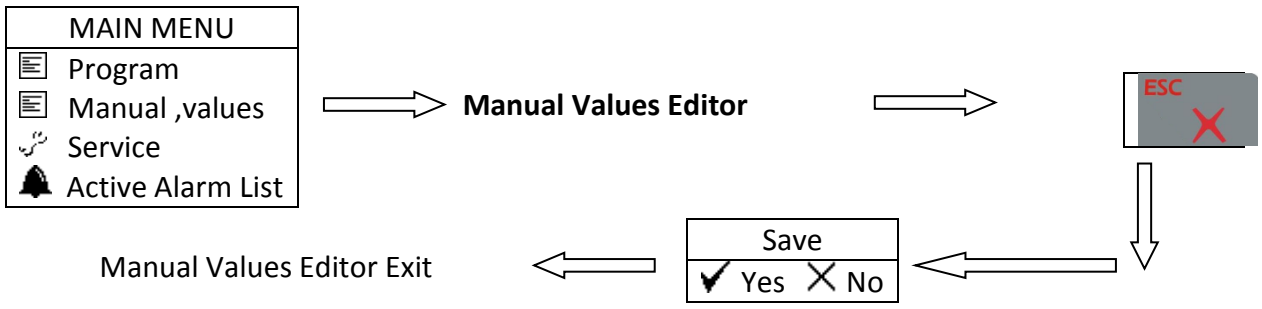
1. **Program:** The programs that will be used in automatic mode, are changed, deleted and copied in this menu. An empty program must be changed and saved to write a new program.



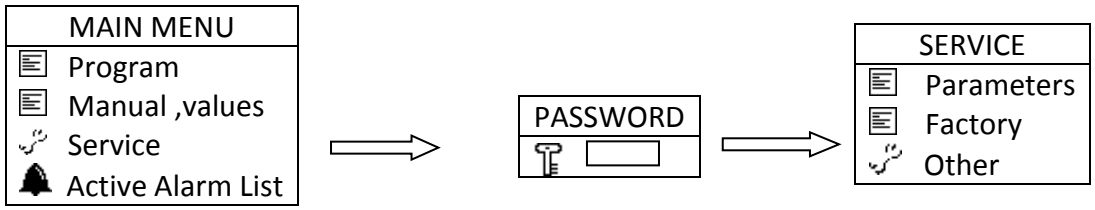




2. **Manual Values:** While device is working in manual mode, required manual working values are changed in this menu.



3. **Service :** Menu has password protection. In this menu available system parameters are changed and system parameters are turned into factory setting and all programs are deleted.



Parameters ⟹ **Parameters Menu**

Factory ⟹

FACTORY
Clear All Parameters
Clear Sys. Parameters
Clear Programs

4. **Active Alarm List:** Active Alarm List displays alarms in system.

MAIN MENU
Program
Manual ,values
Service
Active Alarm List

⟹ **Alarm Watching Screen**

5. **Batch Features:** Batch Features are activated by using MODE button in automatic program watching menu. They are used to run desirable step of working program and change all steps except working step at that moment.

Batch Features
Change Program
Skip Step

⟹ Change Running Program ⟹ Program Editor

⟹ Select Runnig Step

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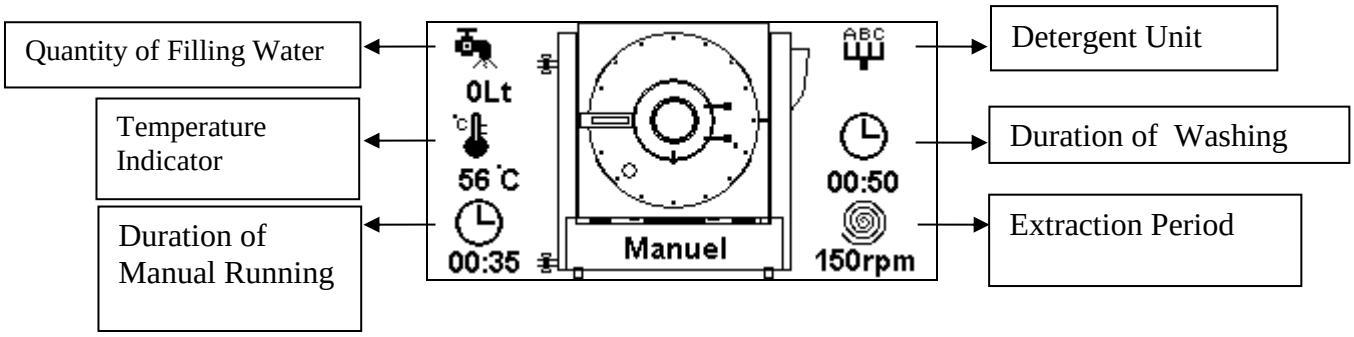
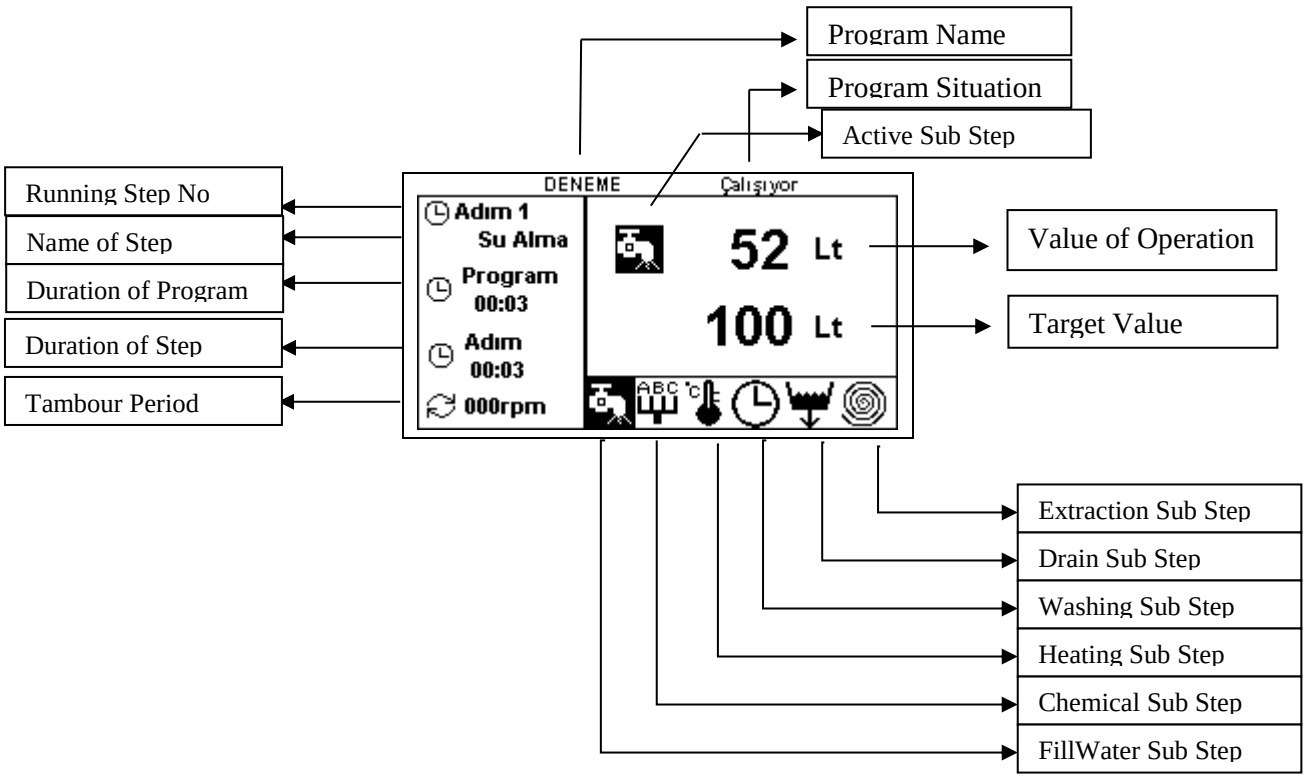
MONITORING SCREENS AND EDITORS

1. **Monitoring Screen**



2. **Automatic Program Watching Screen**



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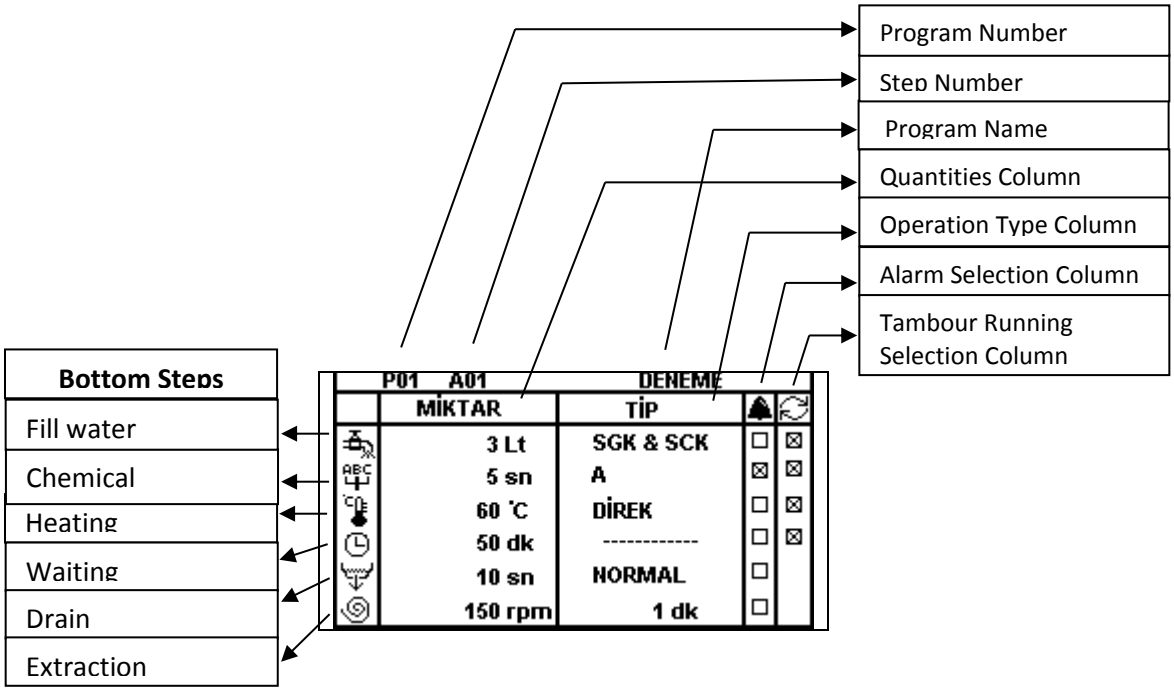
3. **Program Editor**



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MANUAL VALUE CHANGING

Manual values are the datas that will be used in manual running mode. If device is used in manual mode, these values must be entered regularly. There is an item for each manual running value.

To change manual values, the main menu is activated by pressing MENU button from any screen except device automatic program running mode. You may enter the manual value editor that is prepared for changing and saving manual values by selecting second tab of the main menu, Manual Values tab. In that editor, the selected manual value can be changed by using ↑ and ↓ direction buttons. The selection line can be discriminated by its different colour. After selecting the required field, press OK button for changing process. By this operation, value entry field of manual value in line that has explanation, is activated and for value entry the cursor starts to flash. After numeric value is entered by using keyboard, if again OK button is pressed, the value is changed provisionally, but if ESC button is pressed, ancient value is kept. For all manual values, same operation can be repeated. For exiting manual values editor, pres ESC button while value entry is not activated. Before exiting, the editor will ask automatically to save modifications. With the required answer you exit the editor. Instead of answering you can press the ESC button and turn back to the editor.

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WRITE/CHANGE A PROGRAM

The program is a set of consecutive steps that is executed in automatic work mode. All steps consist of six steps which are heating, waiting, draining and extraction. All substeps have alarm and tambour turning option (tambour turning can not be chosen in drain and extraction) except for its specific inputs. Alarm option provides to give information alarm before the related substep starts to run. This alarm is endured automatically at the end of the duration that has been determined in the system parameters, for all substeps except chemical substep. In chemical substep any process is done until this alarm is accepted. Tambour turning option holds the information that is about turning or not turning of the tambour while the substep about turning option is being executed.

To write a program, activate the main menu by pressing MENU, select the program tab (first tab from the main menu) by pressing OK button. Select the change tab from program menu (see Program Menu). All programs that exist in the system will be listed (full or empty). There are 100 programs altogether. Move inside the pages with ↑ and ↓ buttons and through the pages with ↑ and ↓ buttons to reach the program that you want and select with OK button.

After selection you see 'Program Name' question in a window that is opened over the list, as first step. Enter the program name that you want to give to your program by using the keyboard and press OK. Maximum length of the program name is 15 characters. If you do not want to give a name to your program you can erase with BACKSPACE button or if the area is already empty then you can pass naming process directly (to discriminate the programs, it is suggested to give a name that is related to program's function). After entering the program name you meet a step list. All programs consist of maximum 15 steps. You can move between these steps with ↑ and ↓ buttons inside pages and with ↑ and ↓ buttons through the pages. The steps are being run consecutively according to their step number. The initial number of the step that is capable of run is not important. Empty steps are cancelled while running and the next step runs. Your program must be of at least one step that is capable to make your program start.

After selecting the step that you want, enter an input with OK button for changing process. You meet 'step name' question at first. Step naming includes the same rules as

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program naming and maximum length of the step name is 15 characters. Enter the step name and press OK button to approve. After step name you meet 'washing period(rpm)' question. If tambour turning is selected at any substep, the value that you enter here will be used for tambour turning speed at this substep. The minimum value that can be entered in this area is zero and the maximum value that is determined in system parameters can be entered as the maximum value. Enter the washing period and press OK button. After entering washing cycle, step changing editor will open (for details see Step Changing Editor).

You can move between the substeps with ↑ and ↓ buttons in the step changing editor. All values under quantity title are changed by activating value changing by pressing OK button after selecting the related substep and changing is approved by pressing OK button again. All values under type title (except type variable of extraction) are changed by adding alarm to substep and by the help of manual usage buttons for tambour turning addition (see Usage of Keypad). Type variable of extraction can be changed after approving the amount variable. Cursor should be moved to substep with ↑ and ↓ buttons and related buttons should be used for the values that are changed by manual usage buttons. The information that belong to the step in the step changing editor are also symbolized by LEDs in manual usage buttons. For example if there is a process of taking cold water in step, cold water LED is on, else it is off. Alarm and tambour turning LEDs that are special to substep change according to cursor's condition.

After making all the changes that belong to current step you can quit the editor by pressing ESC. When leaving, editor automatically asks if the step shall be saved or not. You can turn to the step list by making a choice. All processes can be applied more than once in any step. After changing all the steps that are necessary for the program, you can exit the program changing menu by pressing ESC. While leaving you will be automatically asked if the program shall be saved or not. You can turn to the monitoring screen by answering this question. (During the program changing process ESC button is used to cancel any change or to quit (for details see Usage of Keypad)).

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PROGRAM COPYING

Copy tab from the program menu is selected. (for details see Program Menu). The list that opens includes all the programs and the program that will be selected to copy. In this list, take the pointer on the program that you want to copy and press OK button. Empty programs can not be copied. A window asking for the location to copy the program will open automatically. In this window, for protecting the programs, the number of the program is written as the first value. In this area, enter the program number that you want to store the program that you copy. The program number you enter must target to an empty program, otherwise copying process will not be done. After entering an empty program number, approve by pressing OK. In the program list you can see the program that you copied. With ESC you can exit from the copying menu.

DELETE PROGRAM

Erase tab is selected from the program menu (for details see Program Menu). The list that opens includes all the programs and the program that will be selected to delete. In this list, take the pointer on the program that you want to delete and press OK. The dialog box that asks your approval to delete the program will open automatically. Select the option Yes and press OK button, the program will be deleted. By pressing ESC you can exit the program deletion menu and return to the mimic monitoring screen.

ACTIVE ALARM LIST

Active alarm list is the menu that displays alarms in the system. This list can be reached by the alarm button or from the main menu. If there is an alarm in the system the LED of the alarm button will be on otherwise it will be off. Explanation regarding to the alarm is within the alarm list.

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WORKING MODE

Felis-T has two running modes as manual and automatic. In the first opening the device starts to work in automatic mode by default. For changing the running mode, select MODE on the monitoring screen. The current mode of the device is displayed at the bottom of the monitoring screen.

1. **Manual Running Mode:** In the manual mode, the device is controlled by the manual running buttons on the key pad. The process values (liter, temperature, working time, extraction period, washing period, extraction duration) that will be used in manual running mode must be adjusted from the manual values screen (for details see **Manual Value Changing**).
    - **Fill Water:** There are three water taking modes: **cold**, **hot** and **soft**. When any kind of water taking process starts, the device will continue to take the amount of water as manually entered value in liters, and terminates the process when it reaches that value.
    - **Heating :** In order the heating process can start, extraction and tilt process must not be done, there must be water up to the resistance level and the doors must be closed. Heating process will continue until the manually entered value is reached. If the target value is reached or the necessary condtions for the heating process fail the heating process terminates automatically.
    - **Washing:** In order the washing process can start extraction, tilt process must not be done and the doors must be closed. Washing process continues during the manually entered wotking time, with the entered washing turn . At the end of the time or if the necessary conditions fail the process terminates automatically.
    - **Extraction:** In order the extraction process can start taking water, heating, washing and tilt processes must not be done and the doors must be closed. The extraction process continues during the manually entered time value, with the entered extraction turn. At the end of the time or if the necessary conditions for the extraction process fail the process is terminated automatically. After the

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extraction process ends the door cannot be opened during the specified time in the system parameters.

- **Drain:** In order the position changing process is active, water taking, heating, washing and extraction processes must not be done. If these conditions are ensured, TILT button will activate device position changing. With the ↑ button upward, with the ↓ button downward movement is performed. There are three positions of the device as extraction, washing and tilt. When tilt is active pushing the ↑ or ↓ buttons means moving to the next position on that way. When the subsequent position is reached motion stops automatically. If the subsequent position can not be reached in the specified time, switch error will occur.
- **Door Opening/Closing:** In order the door can be opened heating, washing, extraction tilt must not be done, and the door waiting time must not be active. If these conditions are ensured (KEY) button is used to open the door (for details see Keypad Usage). In order to close the door, the door must be held on closed during the time specified in the system parameters. After the end of the time, the door will be locked automatically.
- **Drain:** Except during the water taking process, drain process can be executed in every state.

2. **Automatic Running Mode:** In automatic mode, the program written before is operated. In order to process automatic program, the mode of the device must be adjusted as automatic from the mimic monitoring screen. After that, by pressing the START button, the program selecting list that includes all the programs is activated. Select the program to be executed and press OK. In order the program to work, there must be at least one workable step and the doors must be closed, otherwise the program will not start working.

   When the program starts to work, the program monitoring screen is activated. (for details see Automatic Program Monitoring Screen). In this screen , information about the process can be monitored. With the MODE button the Batch Properties menu is

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entered and all the steps of the program except the working one can be changed. Any steps of the program can be executed (step jump), alarms in the system can be controlled and operations like stopping, cancellation and starting can be executed. In a working program pressing STOP button will stop the program. For a stopped program pressing STOP will cancel the program and pressing START will make the program start. When the program ends or is cancelled, the device will return to the mimic monitoring screen in automatic mode. While automatic program is working main menu operations and the manual control buttons do not work (for details see **Automatic Program Monitoring Screen**).

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SYSTEM PARAMETERS

Number	Explanation	Factory Value	Minimum Value	Maximum Value
1	Module Number	1	1	64
2	Language (0:English, 1:Turkish)	1	0	1
3	Password of person who has written the program	0	0	9999
4	Technic Service Password	2004	0	9999
5	Reserved	----	----	----
6	Communication Speed (0->Conjectural, 1->9600, 2->19200, 3->38400)	0	0	3
7	Cooling Support 0→No Cooline 1→Cooling Exist	0	0	1
8	Maximum Temperature	80	30	99
9	Water Fill Tolerance (lt)	0	0	9999
10	Maximum Water Duration on Detergent Taking	60	1	120
11	Resistance Level (minimum level for resistance to work)	3	3	100
12	Load Cover Open Level (lt)	200	0	9999
13	Drain Fail Alarm Level (lt)	500	0	9999
14	Water Stablity Tolerance (lt)	0	0	9999
15	Oil Sensor Support 0→No Oil Sensor 1→Oil Sensor Exist	0	0	1
16	Temperature Alarm Tolerance (C)	5	0	15
17	Check Level sensor type for Rezistance 0→Analogue Level Sensor 1→Flowmeter Sensor	0	0	1
18	Maximum Detergent Count	3	3	6
19	Dosage Unit Active/Passive (if there is dosage unit related to the machine -> 1 Exist, if not ->Not Exist)	0	0	1
20	First Scatter Period	23	20	1500
21	Second Scatter Period	27	20	1500
22	Third Scatter Period	30	20	1500

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23	Fourth Scatter Period	34	20	1500
24	Fifth Scatter Period	44	20	1500
25	Sixth Scatter Period	53	20	1500
26	Seventh Scatter Period	70	20	1500
27	Eighth Scatter Period	110	20	1500
28	Ninth Scatter Period	140	20	1500
29	Tenth Scatter Period	150	20	1500
30	Rising Duration for First Scatter	1	1	120
31	Rising Duration for Second Scatter	1	1	120
32	Rising Duration for Third Scatter	1	1	120
33	Rising Duration for Fourth Scatter	1	1	120
34	Rising Duration for Fifth Scatter	1	1	120
35	Rising Duration for Sixth Scatter	25	1	120
36	Rising Duration for Seventh Scatter	25	1	120
37	Rising Duration for Eight Scatter	20	1	120
38	Rising Duration for Ninth Scatter	20	1	120
39	Rising Duration for Tenth Scatter	5	1	120
40	Waiting Duration for First Scatter	10	0	120
41	Waiting Duration for Second Scatter	10	0	120
42	Waiting Duration for Third Scatter	15	0	120
43	Waiting Duration for Fourth Scatter	10	0	120
44	Waiting Duration for Fifth Scatter	10	0	120
45	Waiting Duration for Sixth Scatter	10	0	120
46	Waiting Duration for Seventh Scatter	15	0	120
47	Waiting Duration for Eight Scatter	15	0	120
48	Waiting Duration for Ninth Scatter	15	0	120
49	Waiting Duration for Tenth Scatter	15	0	120
50	Maximum Extraction Period (rpm)	150	0	150
51	Power Fail Sensor Type 0→for v1.X Main Board 1→for v2.X Main Board	0	0	1
52	Maximum Extraction Duration (min)	6	1	8
53	Rezistance On/Off Time (sec)	2	0	250
54	Inverter Alarm Contact Type 0→NO (Normally Open Contact) 1→NC (Normally Closed Contact)	0	0	1
55	Reserved	0	0	9999
56	Maximum Drain Duration	60	30	180
57	Inverter Type	0	0	1
58	Maximum Washing Duration (min)	60	0	120

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59	Duration for Right and Left Turnings of Tambour (sec)	45	10	120
60	Tambour Stop Time Between Tambour Rotation (sec)	10	7	30
61	Restarting Delay After Vibration Error (sec)	90	5	300
62	Cover Duration	3	2	30
63	Off delay duration of the door lock after program end (sec)	90	60	300
64	Fill water time out duration (min)	10	2	20
65	Scatter no. for the drain during extraction 0→ dry extraction works	1	1	10
66	Shut down delay of fans after the program ends (sec)	5	2	20
67	Target confirmation time for the fill water (sec)	5	5	60
68	Duration for checking up water leakage when tambour is off (sec)	5	3	6
69	Maximum vibration error number	5	1	10
70	Level Offset Value (cm)	5	0	15
71	Temperature Offset Value (C)	5	0	10
72	Maximum Water Level (cm)	50	35	100
73	Waiting Duration for Resistance Check (sec)	5	1	10
74	Flowmeter Ccalibration Value (Pulse/1 Liter **X** 10)	114	0	1000
75	Tilt Type in the Machine 0→No Tilt 1→Pneumatic Tilt 2→Hydraulic Tilt	2	0	2
76	Delay for tambour run operaton during Tilt (sec)	4	1	20
77	Maximum Duration of Tilt (sec)	45	10	60
78	Maximum Duration of Sitting (sec)	45	10	60
79	Tambour Period / Turn on Tilt (rpm)	20	10	42
80	Heater Start Tolerance For Temperature Control (˚C)	3	1	5
81	Heating Value of Resistance per minute (˚C)	3	1	10
82	Cold Water Temperature	30	0	50
83	Hot Water Temperature	60	0	99
84	Average Fill Water Duration	2	1	99
85	Reserved	0	0	1
86	Heater Stop Tolerance For Temperature Control (˚C)	3	0	20

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87	Existance of sample door 0 → Inexistent , 1 → Existent)	1	0	1
88	Tambour rotate duration on tilt operation (sec)	20	10	100
89	Tambour stop duration between rotation on tilt operation (sec)	10	5	100
90	Resistance Type. (0→>Direct, 1→Indirect, 2→Direct+Indirect)	0	0	2
91	Drain Type (0→Direct Drain , 1→Direct Drian + Recycle Drain)	0	0	1
92	Tilt Hydraulic Type. (0→Hydraulic pump is off during sitting 1→Hydraulic pump is on during sitting)	1	0	1
93	Maximum Washing Period	28	0	50
94	Drain Duration for Extracation (Drain duration of water -after the drain starts- after this time if still there is water, drain error will occur)	10	0	60
95	Automatic Find Sample Cover Stasus(Need break equipment) 0→Not Exist 1→Exist	0	0	1
96	Automatic Find Sample period (rpm)	5	1	20
97	Befeore break duration at find Sample Cover (sec)	15	10	60
98	Indirect Heating PID Gain	70	1	100
99	Indirect Heating PID Integral	300	100	1000
100	Indirect Heating PID period	10	5	30
101	Water Tolerance for Stopping Tambour on Fill Water operation (lt)	300	0	9999

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